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ABSTRACT

A classification of propositions (consisting of a verb and its arguments) is presented with a stipulation of the properties of each type, and clarification is given for how the classfication and the properties function in the interaction between propositions and Japanese aspectual auxiliary verbs. The different types of verbs include: (1) state types (indicating state of being); (2) activity types (specifying a particular ongoing action); (3) accomplishment types (identifying an activity toward a particular object or concept); (4) achievement types (indicating the completion of an action); (5) plural completion types (indicating completion of an event that was performed more than once); and (6) plural activity types (indicating that an activity was performed more than once). The propositions and properties of each verb type are discussed in the context of the Japanese verb "ir-" in the following areas: general rules for the auxiliary verb "ir-"; aspect of state resulting from action; aspect of experience; aspect of iterative event, and aspect of ongoing event. (DJD)

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Event Types, The Properties and Lexical Entry For The Japanese Aspectual Auxiliary Verb *IR-*

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EVENT TYPES, THE PROPERTIES AND LEXICAL ENTRY
FOR THE JAPANESE ASPECTUAL AUXILIARY VERB *IR-*

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1. Vendler's Verb Classification

This paper presents a classification of propositions (consisting of a verb and its argument(s)) with a stipulation of the properties of each type, and shows how the classification and the properties function in the interaction between propositions and Japanese aspectual auxiliary verbs. Since four of the six types of propositions proposed here are similar in concept to those introduced by Zeno Vendler, an introduction to his study is in order.

1.A. Four categories

Vendler divides verbs into four categories according to their different behaviors in various linguistic contexts with respect to Aspect and time expressions: they are called 'state verbs', 'activity verbs', 'accomplishment verbs' and 'achievement verbs', as listed below:

(1)

State verbs	Activity verbs	Accomplishment verbs	Achievement verbs
know	run	paint a picture	recognize a mistake
believe	walk	make a chair	spot an airplane
have	swim	draw a circle	lose money
desire	push a cart	recover from illness	reach the top
		deliver a sermon	die

State verbs indicate state, whereas activity verbs and accomplishment verbs indicate ongoing processes. Therefore, state verbs cannot take the progressive form which highlights ongoing processes, whereas activity verbs and accomplishment verbs can, as shown below:

(2)

a. state verbs
??I am knowing the answer.
??He is believing your story.

b. activity verbs
He is running.
John is pushing a cart.

c. accomplishment verbs
I am painting a picture.
He is drawing a picture.

For a different reason from that for the incompatibility of the progressive form with state verbs, the progressive form is rather strange with achievement verbs as well, as given below:

(3)

a. ??I am recognizing a mistake.
b. ??I am spotting an airplane.[1]

The reason for the anomaly is that achievement verbs can be predicated only for single moments of time, moments of completion of an event. However, although the behavior of state verbs and achievement verbs is similar in some cooccurrence restrictions, they differ in time schemata, as shown below:

(4) a. state verbs
I had the book from Monday to Friday.
I believed it from 1980 to 1983.

b. achievement verbs
??I recognized a mistake from 3 o'clock to 5 o'clock.
??I spotted an airplane from Monday to Friday.

Likewise, there is a marked difference between activity verbs and achievement verbs, although they are similar in that both take the progressive form. Activity verbs describe ongoing homogeneous stages of an event, but not a final stage of the event, whereas accomplishment verbs not only imply ongoing stages of an event but also the final stage. Therefore the question asking the time required to complete an event does not justify the use of activity verbs, whereas it does justify the use of accomplishment verbs, as shown below:

(5) a. activity verbs
??How long does it take to swim in the river?
??How long does it take to run?

b. accomplishment verbs
How long does it take to make a chair?
How long does it take to run a mile?

As we have seen, verbs can be divided into four categories shown in (1).

1.B. Some Problems

Although it is true that the categorization helps predict some restrictions on cooccurrences of each type of verbs with Aspectual auxiliaries or time expressions, it does not render straightforward explanation for some examples such as those given below:

(6) a. ??I am spotting an airplane.
b. I am spotting airplanes.

The verb *spot*, which is an achievement verb according to Vendler's classification, cannot be used in the progressive Aspect, since achievement verbs are predicated only for an instantaneous moment. This explains the anomaly of (6a), but does not explain acceptability of (6b). If we use those tests employed to determine the type of a verb, the verb *spot* in (6b) turns out to be an activity verb, since the question 'How long does it take to spot airplanes?' does not make sense, and the progressive expression is acceptable, as given in (6b).

From these facts, we might conclude that the verb phrase *to spot an airplane* is of an achievement type, while the verb phrase *to spot airplanes* is of an activity type.

In order to examine this conclusion, I pose the following two questions given below:

(7) (i) whether we should view Vendler's classification as that of the verb phrase, and

(ii) whether it is correct to regard *to spot airplanes* as of an activity type as much as *to walk* and *to swim*, and if it is not, what are the essential properties of an activity type and what type *to spot airplanes* is.

The answer of the first question seems negative if we take the assumption that the verb phrase consists of the predicate verb and, if any, THE OBJECT(S). Observe the following examples given below:

(8) a. ??John was dying for an hour.
b. People were dying for an hour.

Although (8a) and (8b) have the same verb phrase, *to die*, they differ in acceptability when they are in the progressive form. From this, we could infer that the number of the subject noun phrase makes a difference in acceptability in the two sentences in (8).[2] This suggests that it is not sufficient to regard Vendler's classification as that of the verb phrase, but that it is pertinent to take the classification as that of a proposition consisting of a verb and ITS ARGUMENT(S). The above fact in turn gives rise to the assumption that elements involving Aspect such as the progressive form take a proposition as an argument rather than a verb or a verb phrase.

2. Propositions Proposed

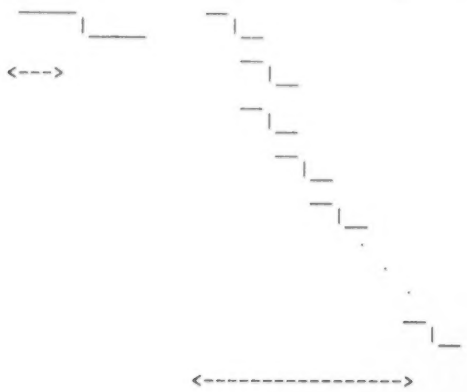
2.A. Types

Now let us examine the second question addressed earlier, which is given below:

(9) (ii) whether it is correct to regard the proposition that I spot airplanes as that of an activity type as much as the proposition that I walk, and if it is not, what is the essential property of an activity type and what type the proposition that I spot airplanes is.[3]

The proposition that I spot airplanes and the proposition that I walk are the same in the following two points: they can be an argument of the progressive Aspect and they cannot be the complement of the question 'How long does it take ...?'. There is a difference, however, between them: the former proposition may indicate more than one occurrence of an event, whereas the latter is absent of the indication. Let us call the type of the former proposition 'plural activity type', as opposed to activity type. The diagrams given below would show the difference between the two types:

(10) a. activity verbs b. plural activity verbs



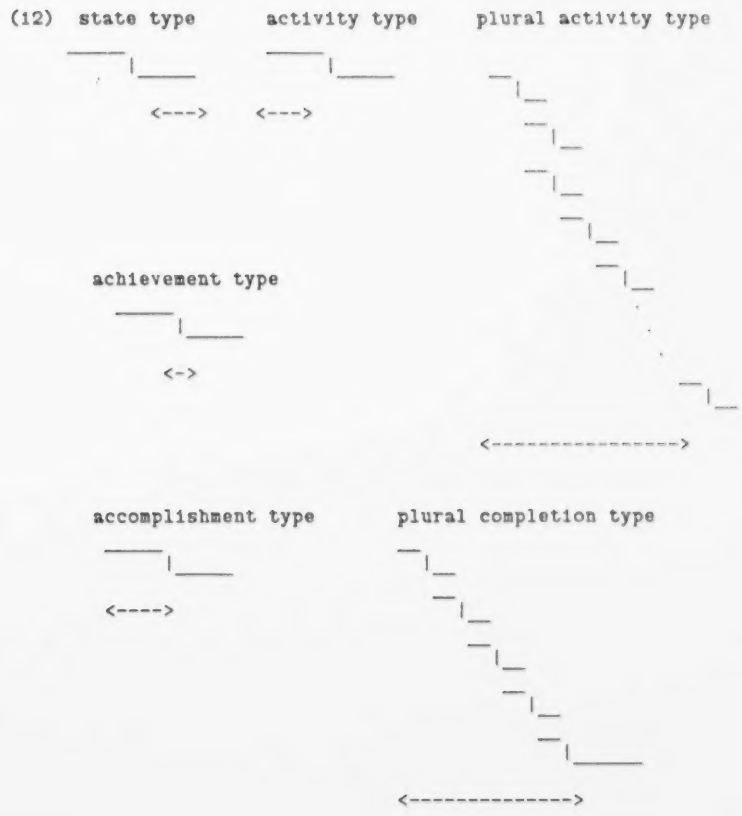
The vertical line indicates a point of time when an event may be completed. The upper line preceding the vertical line indicates a time span engaged in action, whereas the lower line following the vertical line indicates a time span engaged in a state. The arrow bounded line below each diagram indicates that the type highlights only the corresponding portion of a whole event indicated by the above diagram.

There is one more plural type, which is termed here the 'plural completion type'. The difference from the plural activity type is that although both types indicate more than one occurrence of an event, the plural completion type indicates completion of the whole event, whereas the plural activity type does not. Therefore, the former can be the complement of the question 'How long does it take?', whereas the latter cannot, as shown below:

(11) a. plural completion type
How long did it take to draw the circles?

b. plural activity type
??How long did it take to draw circles?

Now that we have seen all the types proposed here, let us recapitulate them by using the diagrams, given below:



2.B. What Properties Each Type Has

Next, let us consider what are the properties of each type. The properties of each type postulated are shown in the table given below:

(13)

	ST	ACT	ACC	ACH	PLUACT	PLUCOMP
EVENT	+	+	+	+	+	+
DYNAMIC	−	+	+	+	+	+
DURATION	+	+	+	−	+	+
FINITE	−	−	+	+	−	+
PLURAL	−	−	−	−	+	+[4]

The first property EVENT distinguishes propositions such as 'dogs have four legs' from those referring to a specific time span such as 'Boys were running after a dog'. The feature DURATION concerns time length. A proposition having the positive value of DURATION denotes an event of some duration, whereas that with the negative value a momentary event. The feature FINITE concerns the implication of boundedness of a proposition. The positive value of this feature contained in a proposition means that the proposition indicates completion of an event involved. A proposition having the positive value of the feature PLURAL indicates more than one occurrence of an event. How these hypothetical types of propositions and the properties work in a grammar will be shown next.

3. How Types of Propositions and Properties Work

To see how the properties participate in linguistic phenomena, I take the Japanese aspectual auxiliary verb *ir-* as an example.

3.A. General Rules for the Auxiliary Verb IR-

First, I propose the following general rules given in (14) for the lexical entry for the auxiliary verb *ir-* before presenting specific rules involving various Aspects obtained after the affixation of the auxiliary verb in question:

(14) ir: AUX, (↑PRED) = 'IRU <(SUBJ)(VCOMP)>';
(↑VCOMP TE-FORM) $=_c$ +;
(↑VCOMP SUBJ) = ↓SUBJ;
(↑VCOMP EVENT DYNAMIC) $=_c$ +;

The first defining equation (↑PRED) = 'IRU <(SUBJ)(VCOMP)>' indicates that the auxiliary verb takes two arguments, that is, the subject argument and a proposition. The second equation in the lexical entry is a constraint equation. It constrains the form of the predicate verb of VCOMP to the te-form.

The third equation is a control equation. The equation reads that the subject of VCOMP becomes the subject of the mother node, which is a proposition obtained after the affixation of the auxiliary verb. The fourth and last constraint equation means that the VCOMP must be a proposition expressing a dynamic event, that is, a

proposition other than that of state type.

The affixation of the auxiliary verb to a proposition is assumed to give rise to the Aspect of state resulting from action, experience, iterative event and ongoing event.

3.A.1. Aspect of State Resulting from Action

As an initial attempt to account for the data concerning the Aspect of state resulting from action, a rule is proposed:

(15) IF (↑VCOMP EVENT FINITE) = + AND
(↑VCOMP EVENT DURATION) = -
THEN (↑ASPECT) = RESULTATIVE AND
(↑EVENTTYPE) = STATE.

The conditional reads that if the event expressed by VCOMP denotes a finite event indicating completion of an event as well as a momentary event, then the proposition resulting after affixation of the auxiliary verb obtains the Aspect of state resulting from action, and the type of the event turns stative.

As the first equation of the antecedent of the conditional indicates, the argument proposition of the auxiliary verb must denote a finite event. The types of propositions indicating a finite event are of accomplishment type, achievement type and plural completion type. Among propositions of these three types, those which do not denote an event of some duration are of achievement type. Therefore the antecedent of the conditional applies only to the propositions of achievement type.

Now let us examine whether the conditional in (15) holds. Look at the examples given below:

(16) a. Konoha-ga ochite-iru. 'The leaves have fallen down.'
leaves nom fall

b. John-ga asoko-ni shinde-iru. 'John is dead over there.'
nom there die

c. John-wa kekkon-shite-iru. 'John is married.'[5]
topic marry

The three propositions *konoha-ga ochiru-koto* 'that the leaves fall down' *John-ga shinu-koto* 'that John dies' and *John-ga kekkon-suru-koto* 'that John marries' are considered to be of achievement type, since they indicate moments of completion of an event. The sentences in (16) all indicate state resulting from action.

3.A.2. Aspect of Experience

Next let us focus our attention on the instance in which affixation of the auxiliary verb gives rise to the implication that the subject of the sentence has experienced the event expressed by the argument proposition. Look at the example given below, which has been mentioned already in (16c) as an example indicating state resulting from action:

(17 = 16c) John - wa kekkon-shite-iru. a. 'John is married.'
topic marry b. 'John has married (once).'

As noted earlier, (17) is ambiguous between the two readings: state resulting from action and experience of the subject. I speculate that the reading as experience of the subject is due partly to the animacy of the subject.

Now, let us examine propositions of the other types: whether affixation of the auxiliary verb to propositions of the other types also gives rise to the Aspect of experience. Let us observe the following examples:

(18) a. activity-type argument proposition
John - wa oyoide-iru. ??'John has experience of swimming.'
topic swim

b. accomplishment type argument proposition
John-wa hon-o kaite-iru. 'John has experience of writing a book.'[6]
books write

Judging from (17) and (18), it seems plausible to postulate a rule saying that the argument proposition should be a finite event.

However, there are at least two types of counterexamples to this assumption; one type of counterexamples is due to semantic or rather pragmatic conflicts between the Aspect and the argument proposition. For instance, the following sentence is a counterexample of this type:

(19) John-wa shinde-iru. ??'John has experience of dying.'
topic die

It will never be construed as expressing the Aspect of experience because to die is not considered to be an experience in this world. Counterexamples of this type will be ruled out not by the rule postulated here, but for a pragmatic reason.

The other counterexample is as follows:

(20) John-wa France-go -o shitte-iru. 'John knows French.'
language acc know

The rule concerning the Aspect of experience cannot rule out this counterexample at present. I propose the following rule and call it Rule (B), as opposed to the rule in (15), which I call Rule (A), given below:

(21) Rule (A) (= 15)

IF (↑VCOMP EVENT FINITE) = + AND
(↑VCOMP EVENT DURATION) = -
THEN (↑ASPECT) = RESULTATIVE AND
(↑EVENTTYPE) = STATE;

Rule (B)

IF (↑VCOMP SUBJ ANIMATE) = + AND
(↑VCOMP EVENT FINITE) = +
THEN (↑ASPECT) = EXPERIENCE AND
(↑EVENTTYPE) = ACHIEVEMENT;

Rules (A) and (B) can account for two readings of (17), repeated below:

(22 = 17) John - wa kekkon-shite-iru. (i) 'John is married.'
topic marry (ii) 'John has married once.'

Since the proposition *John-ga kekkon-suru koto* 'that John marries' is of achievement type, the Aspect of the sentence in (22) is assigned the Aspect of resulting state in terms of Rule (A). At the same time, since the subject of the argument proposition in question is animate and the argument proposition is a finite event, the Aspect of the sentence in (22) is assigned the value EXPERIENCE by virtue of Rule (B). If we add a quantifier *sando* 'three times', however, we can disambiguate the sentence in (22), as shown below:

(23) John-wa SANDO kekkon-shite iru. (i) ??'John is married three times.'
topic 3 times marry (ii) 'John has married three times.'

The reason why the sentence indicating the Aspect of state resulting from action cannot cooccur with the quantifier of frequency is that the proposition after the affixation of the auxiliary verb is of state type, indicating a nonfinite event, and a nonfinite event cannot be counted; on the other hand the reason why the sentence indicating the experience of the subject can cooccur with the quantifier of frequency is that the resulting proposition is achievement type, denoting a finite event, which can be counted.

3.A.3. Aspect of Iterative Event

Next we are going to see the third rule concerning the Aspect obtained after the affixation of the auxiliary verb. The rule is formulated below:

(24) Rule (C)

IF (↑VCOMP EVENT PLURAL) = +
THEN (↑ASPECT) = ITERATIVE AND
(↑EVENTTYPE) = ACTIVITY;

The rule is intended to mean that if the argument proposition indicates a plural event, then the affixation of the auxiliary verb gives rise to the implication of iteration. The propositions expressing a plural event are those of plural activity type and plural completion type.

In order to see how Rule (C) works, let us observe the following examples:

(25) a. John-ga shinde-iru. 'John is dead.'
nom die

b. Hitobito-ga shinde iru. (i) '(The) people have been dying.'
people die (ii) 'The people are dead.'

Since the argument proposition of the auxiliary verb in (25a) is of achievement type, the proposition after affixation obtains the Aspect of state resulting from action by virtue of Rule (A). The fact that the type of event of the sentence is state could be supported by the English translation as a stative sentence. On the other hand, (25b) has two readings: reading of an iterative event and reading of resulting state of the subject. It is assumed here that the reading of an iterative event is due to Rule (C) because the argument proposition of the auxiliary verb in (25b) may indicate a plural event when the subject is interpreted as denoting each individual and therefore Rule (C) applies; on the other hand the reading of resulting state is due to Rule (A) because the argument proposition may be construed as of achievement type when the subject is interpreted as denoting a group of people as a whole, and thus Rule (A) applies.

3.A.4. Aspect of Ongoing Event

Now let us see another rule for the auxiliary verb *ir-*:

(26) Rule (D)

IF (↑VCOMP EVENT DURATION) = + AND
(↑VCOMP EVENT PLURAL) = -
THEN (↑ASPECT) = ONGOING AND
(↑EVENTTYPE) = STATE.

The meaning of this rule is that if the argument proposition expresses a durative event without indicating a plural event, then the Aspect of the proposition after affixation will be ongoing, and the type of event becomes of state type. Note that although propositions of state type indicate a durative event, they will have been excluded already by the preceding general constraint rule shown below:

(27 = 14) (↑VCOMP EVENT DYNAMIC) $=_c$ +.

Propositions expressing a durative event are of activity type, accomplishment type, plural activity type and plural completion type; but inclusion of propositions of plural activity type and plural completion type is prevented by the second item of the antecedent: (↑VCOMP EVENT PLURAL) = -. Therefore, the propositions Rule (D) applies to are restricted to those of activity type and accomplishment type. Rule (D) is intended to account for why the affixation of the auxiliary verb to the argument propositions of activity type and accomplishment type gives rise to the ongoing Aspect. Examples are as follows:

(28) Activity type

a. John-ga Arbeit-shite -iru. 'John is working (part time).'
nom work (part time)

b. Ame - ga hutte-iru. 'It is raining.'
rain nom fall

(29) Accomplishment type

a. John-ga hon -o kaite-iru. 'John is writing a book.'
nom book acc write

b. John-ga table-o tsukutte-iru. 'John is making a table.'
nom acc make

3.B. Summary

Lastly let us recapitulate all the rules proposed here for the lexical entry for the auxiliary verb *iru*:

(30) iru: AUX, (↑PRED) = 'IRU <(SUBJ)(VCOMP)>';
(↑VCOMP TE-FORM) $=_c$ +;
(↑VCOMP SUBJ) = ↓SUBJ;
(↑VCOMP EVENT DYNAMIC) $=_c$ +;

IF (↑VCOMP EVENT FINITE) = + AND
(↑VCOMP EVENT DURATION) = -
THEN (↑ASPECT) = RESULTATIVE AND
(↑EVENTTYPE) = STATE;

(= Rule (A))

IF (↑VCOMP SUBJ ANIMATE) = + AND
(↑VCOMP EVENT FINITE) = +
THEN (↑ASPECT) = EXPERIENCE AND
(↑EVENTTYPE) = ACHIEVEMENT;

(= Rule (B))

IF (↑VCOMP EVENT PLURAL) = +
THEN (↑ASPECT) = ITERATIVE AND
(↑EVENTTYPE) = STATE;

(= Rule (C))

IF (↑VCOMP EVENT DURATION) = + AND
(↑VCOMP EVENT PLURAL) = -
THEN (↑ASPECT) = ONGOING AND
(↑EVENTTYPE) = STATE.

(= Rule (D))

FOOTNOTES

[1]However, as is pointed out in Dowty (1979:130), the progressive form does not sound so bad with many achievement verbs as in *John is dying* and *John is arriving*. Achievement verbs, like state verbs, do not occur with adverbs implying agency such as *studiously* and *attentively*.

[2]A similar comment is found in Dowty (1979:63).

[3]The term *verb phrase* was used in the original question, but it has been changed to *proposition*, since we have established the approach that Aspectual classification involves a proposition rather than a verb phrase.

[4]State type, activity type, accomplishment type, achievement type, plural activity type and plural completion type are abbreviated to ST, ACT, ACC, ACH, PLUACT and PLUCOMP.

[5](16a) and (16c) have another reading: as an iterative event and experience respectively. But I will disregard them for the time being, because we will study them later.

[6]If (18a) accompanies a postpositional phrase indicating a specific place such as *Olympics de* 'in the Olympics', a reading of the Aspect of experience obtains. (18b) has another reading of ongoing activity: 'John is writing a book'.

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